Virginia's TMDL Program

Every year the Virginia Department of Environmental Quality monitors the state's rivers, lakes and tidal waters for pollutants to determine if the public can use them for swimming, fishing and drinking. Waters are considered "impaired" if they fail to meet Virginia water quality standards and support their designated uses because pollution amounts are too high.

Designated uses are those uses specified in water quality standards for each water body or segment. All Virginia waters are designated for the following uses: recreational uses (like swimming and boating); the propagation and growth of a balanced, indigenous population of aquatic life, including game fish; wildlife; and the production of edible and marketable natural resources (such as fish and shellfish).

Since 1999 Virginia's watershed program has operated under the provisions and schedule contained in a federal court consent decree. With public input, DEQ has developed plans to restore impaired waters and maintain water quality. These plans establish a "total maximum daily load," or TMDL, for the impaired waters. A TMDL represents the total amount of a pollutant a water body can contain and still meet water quality standards. DEQ also develops a TMDL implementation plan and works with partners to reduce pollution to the level required by the TMDL.

Progress and Future Goals

TMDL development

The Virginia TMDL program has successfully met the demands of the rigorous consent decree development schedule. By 2010 the program will have completed nearly 760 TMDLs. The current consent decree schedule will be replaced by a memorandum of understanding with the U.S. Environmental Protection Agency. This new schedule will address about 1,200 additional impaired waters for TMDL development over the next 12 years.

TMDL implementation

Once a TMDL has been completed, it is submitted to EPA for approval. Federal and state regulations require Virginia's permitting programs to implement point source pollutant reductions identified in the TMDLs. For non-point source reductions, DEQ and its partner agencies develop a TMDL implementation plan as specified in the *Code of Virginia*. The plan describes ways to reduce pollution levels in the stream and includes a schedule of actions, costs and monitoring. The following table includes the most recent schedule through 2009. Completion of a plan for all remaining waters will be dependent upon available funding and staff.

Implementation Plans		
	Number of plans	Number of TMDLs covered
Completed	35	106
Scheduled	8	37

Best management practices

Best management practices are effective and practical ways to prevent or reduce pollution from nonpoint sources to ensure water quality. BMPs may include repairing septic systems, establishing storage areas for animal waste and planting vegetation.

A number of rural watersheds dominated by non-point pollution sources have improved following various agricultural activities. Local soil and water conservation districts or the Virginia Department of Conservation and Recreation have taken the lead in overseeing the implementation of the best management practices. Subsequent monitoring in watersheds such as the North River, Middle Fork Holston River, Willis River and Blackwater River has demonstrated the benefits of these practices.

Many voluntary and government-funded best management practices are used throughout the watersheds. Because of these practices, targeted tributaries such as the North River have reduced bacteria levels. Activities to reduce bacteria levels included reforesting land, improving septic systems and installing fencing along waterways.

Several of the required agricultural and residential best management practices designed to reduce bacteria have also improved sediment and nutrient pollution. For example, vegetated buffers along stream banks reduce sediment and nutrient transport into the stream. When tested for nutrients, most of the sites in the watershed showed a trend of less nutrient pollution in the waterways over time.

Challenges

There are a number of emerging issues for Virginia's TMDL program, such as polychlorinated biphenyls (PCBs), mercury, shellfish harvest restrictions and flow issues in urbanized watersheds.

PCBs and Mercury

Fish with elevated levels of mercury are found in the South River and the South Fork Shenandoah River, while those in Potomac River waters have high levels of PCBs. In 2006 DEQ and its partners began public meetings on these and other impaired waters scheduled for TMDL development. The challenges include identifying sources and determining how the pollutants move throughout the ecosystem. Progress has also been made on TMDL development for mercury contamination on the South River of the Shenandoah River Basin as well as the North Fork Holston River in southwest Virginia. TMDLs for these watersheds are targeted for completion in 2009.

Contaminants such as PCBs offer a unique challenge, since manufacture of these chemicals has been banned for decades. The tidal Potomac River PCB TMDL was completed in 2007, and the Roanoke River and Levisa Fork PCB TMDLs are scheduled for completion in 2009. PCB source investigation studies have recently been initiated for the Elizabeth and upper tidal James rivers.

When an ongoing source is identified, the TMDL specifies the amount of reduction necessary. In many cases this will be addressed through a Pollutant Minimization Plan. Sources not associated with dischargers would likely be cleaned up through DEQ's Waste Division.

Shellfish harvest restrictions

Shellfish harvest restrictions due to fecal bacterial contamination are common throughout Virginia's tidal Chesapeake Bay tributaries. TMDLs frequently implicate human sources such as failing septic systems, marinas, and overboard sewage discharge from boats. DEQ has been directed by the General Assembly to seek federal designation of the Commonwealth's tidal tributaries as "no discharge zones." This designation prohibits the overboard discharge of sewage (treated or untreated). This action is pursued concurrently with a robust effort to raise public awareness of the environmental impact of boat waste, and to establish and promote pump-out facilities as alternatives.

Currently, the Lynnhaven River in Virginia Beach is the first tidal no discharge zone, while applications for three Bay tributaries in lower Middlesex County are in the final stages of EPA review. The Lynnhaven no discharge zone has led to the reopening of 1,462 acres of condemned shellfish growing areas to commercial harvest. Some of these areas had been closed since the 1930s. Upcoming efforts to expand no discharge zones will focus on Bay tributaries bordering Virginia's Northern Neck. This action has received considerable support from municipal and county government as well as other local and regional stakeholders.

Sediment deposit on Accotink Creek

Stormwater flow issues in an urbanized watershed

Accotink Creek is a highly urbanized watershed located in Fairfax County. It is listed as impaired for failing to meet the aquatic life use. In 2007 and 2008 DEQ conducted a stressor analysis to determine what pollutants were harming the creek. Analysis revealed that high storm water flows, which can lead to excessive instream erosion and the physical destruction of small aquatic life, is the most likely stressor.

As a result, DEQ is a partner with EPA in developing a stormwater TMDL for Accotink Creek, the first of its kind in the Commonwealth. The TMDL will aim to determine the magnitude of storm water reductions needed to restore health to the benthic community.

Funding and future needs

Despite the challenges, DEQ projects the agency will be able to meet the consent order schedule and complete the development of the TMDLs required by 2010. However, this assumes level funding sources and accurate estimates. Because there are no new authorities for enforcing TMDLs, it has been Virginia's expectation to implement TMDLs using existing programs and funding sources. Existing resources include permits from DEQ, DCR and the Virginia Department of Mines, Minerals and Energy that limit discharges to state waters. These programs are utilized when stream impairments are attributed to a permitted facility. For non-permitted activities, Virginia's approach has been to use incentive-based programs such as the Virginia Agricultural Cost Share Program and the State Revolving Loan Fund. Virginia also offers dedicated funding for the implementation of best management practices in watersheds with approved implementation plans.

More information is available on the DEQ web site at ***www.deq.virginia.gov/tmdl.***